



**WYOMING DEPARTMENT OF AGRICULTURE
ANALYTICAL SERVICES**

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Sampling for Nitrate analysis in forages and harvested hays

Some common sources for high nitrates are heavy fertilization, overuse of manure, planting new grain hays in what was previously an alfalfa (or other legume) field, cool weather, late or mid season freezes, and drought stress.

Nitrate levels can vary significantly from one part to another in the same field. It is best not to rely on the results of a single sample from one location in the field. The best alternative is to sample several locations within the field depending on its size.

Nitrate levels can also vary with numbers and types of other plant and weed varieties present in the stand. If the stand is not homogenous throughout, chances are that nitrate levels will change with these variations. In this case again it is best to take several samples accordingly.

When taking multiple samples from a field it is best to treat each sample individually instead of combining all samples into one. Combination of samples defeats the purpose of determining variations in nitrates across the stand and determining their sources. Please also remember that in the laboratory large samples are difficult to work with. Large or combined samples usually can not be handled in a manner which will provide representative results. Under most circumstances a pound of material is sufficient for each sample. We suggest that you consult your county extension office when sampling feed and forage materials so that they can assist with any problems which may arise.

In fields that have not yet been harvested, nitrate levels can vary significantly with changes in weather, temperature, moisture, and even time of day that the sample was taken. It is best to take samples later in the day during hot sunny weather, after the stand has had a chance to metabolize the nitrate. If samples are taken early in the morning, or during or immediately after cool weather, then the nitrate levels may be high. Likewise, if the stand is cut for harvest early in the morning or during or immediately after cool weather, the nitrate levels may also be high.

It is best to sample a field before it is cut. If a sample is taken from a field before cutting and the nitrate levels are elevated, it is possible to let the field stand for several days and resample. Usually this will result in lower nitrate levels, especially if the weather is cooperative. If the weather has cooled off in the meantime, then nitrate levels will probably remain high or even worsen. Remember that once a field is cut for harvest, you are stuck with whatever the nitrate levels are at that time.

We realize that second guessing like this can be difficult and may not always prove beneficial. We try to accommodate your samples in such a way to provide results as soon as possible so that crucial decisions can be made. Also we realize that effective sampling can be costly, especially when several or repeated samples are necessary. Please contact the laboratory if it is necessary to look at a number of samples and we will try to make things as cost effective as possible.